Fall 2019 - ECON 634 - Advance Macroeconomics - Problem Set 5

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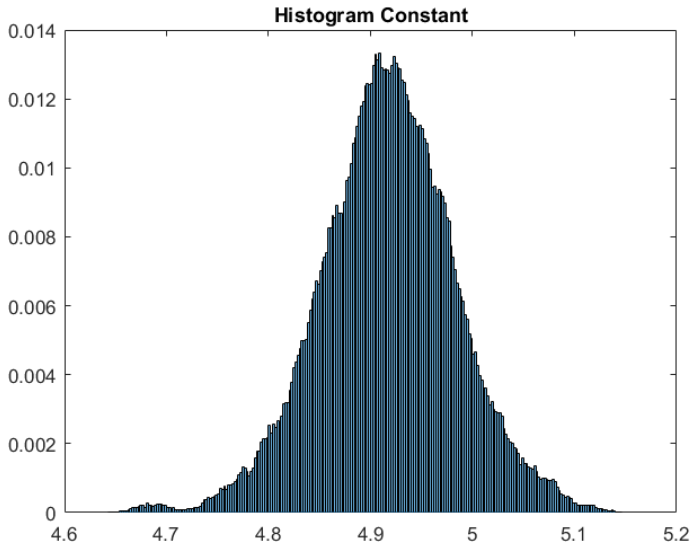
1. Running the asked equation in matlab give me the following results:

Table 1: Estimation of OLS regression Using Card's data

	Coefficient	St. Error
Constant	4.9133***	(0.063121)
Education	0.073807***	(0.0035336)
Experience	0.039313***	(0.0021955)
smsa	0.16474***	(0.015692)
Black	-0.18822***	(0.017768)
South	-0.12905***	(0.015229)
Root Mean Squared Error: 0.377		

2. The histogram of the variables are presented bellow:



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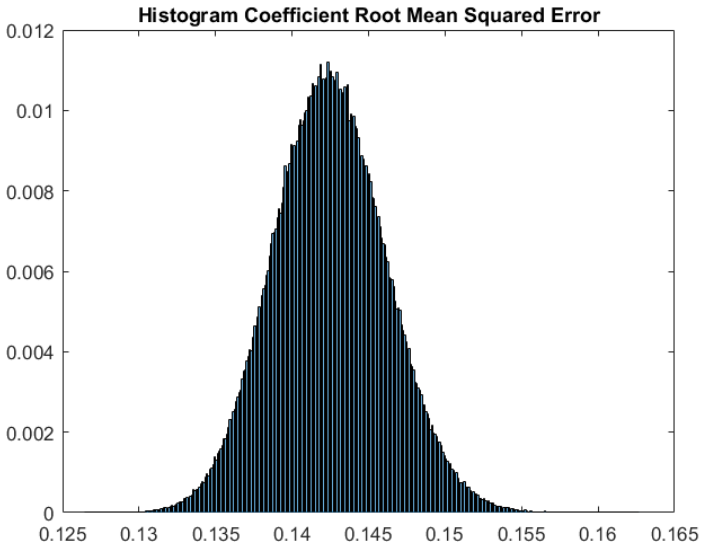
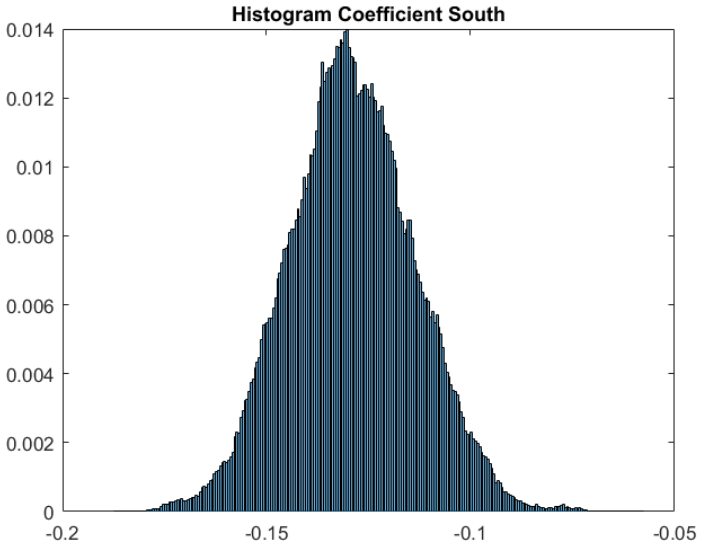
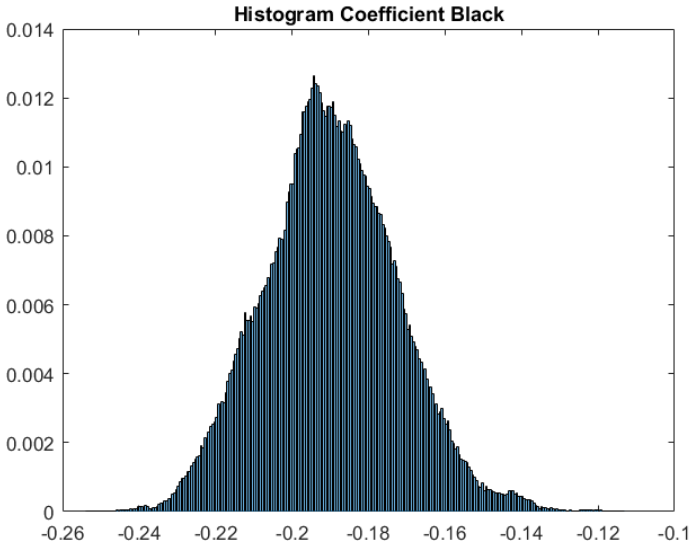
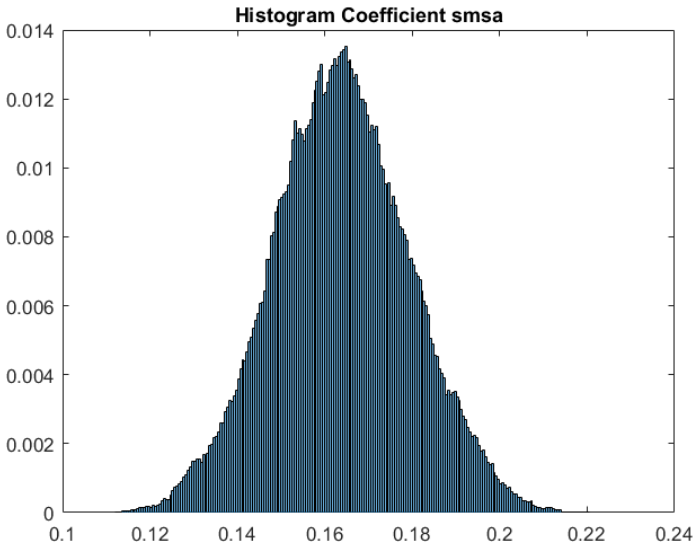
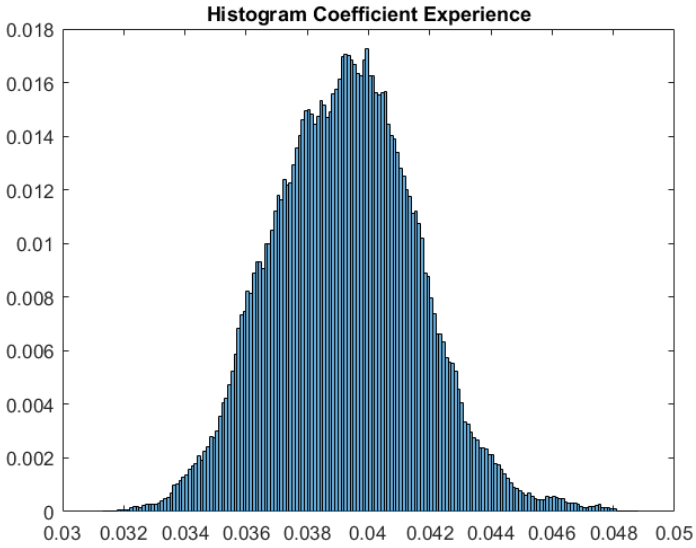
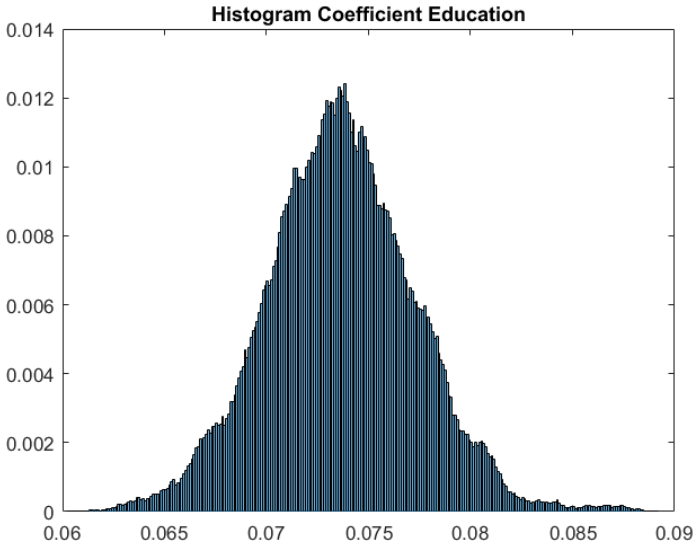

Histogram Coefficient Root Mean Squared Error
0.012
0.01
0.008
0.006
0.004
0.002
0
0.125
0.13
0.135
0.14
0.145
0.15
0.155
0.16
0.165


Histogram Coefficient South
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
-0.2
-0.15
-0.1
-0.05


Histogram Coefficient Black
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
-0.26
-0.24
-0.22
-0.2
-0.18
-0.16
-0.14
-0.12
-0.1


Histogram Coefficient smsa
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
0.1
0.12
0.14
0.16
0.18
0.2
0.22
0.24


Histogram Coefficient Experience
0.018
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
0.03
0.032
0.034
0.036
0.038
0.04
0.042
0.044
0.046
0.048
0.05

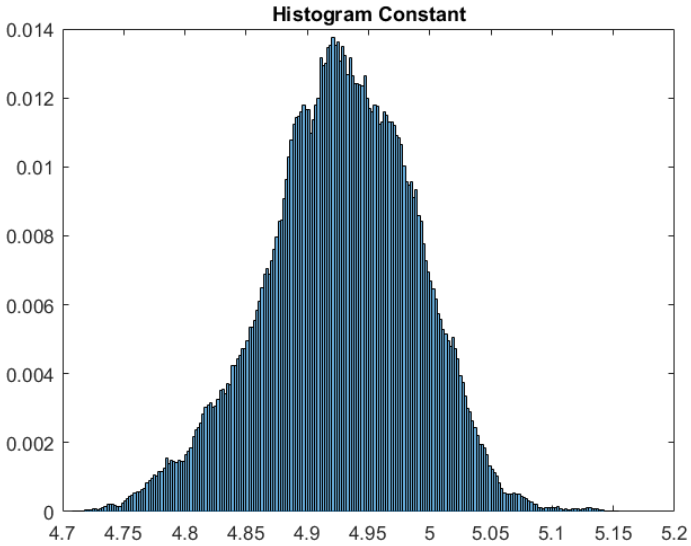

Histogram Coefficient Education
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
0.06
0.065
0.07
0.075
0.08
0.085
0.09

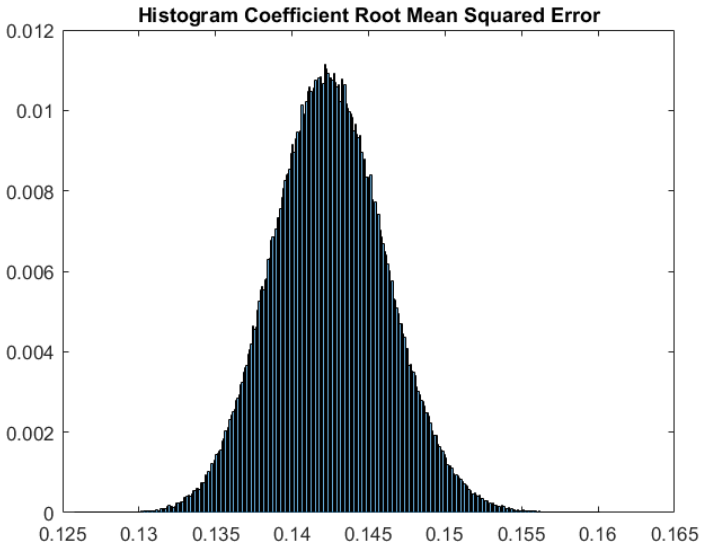
The summary of the first two moments of the distributions can be seen in the following table:

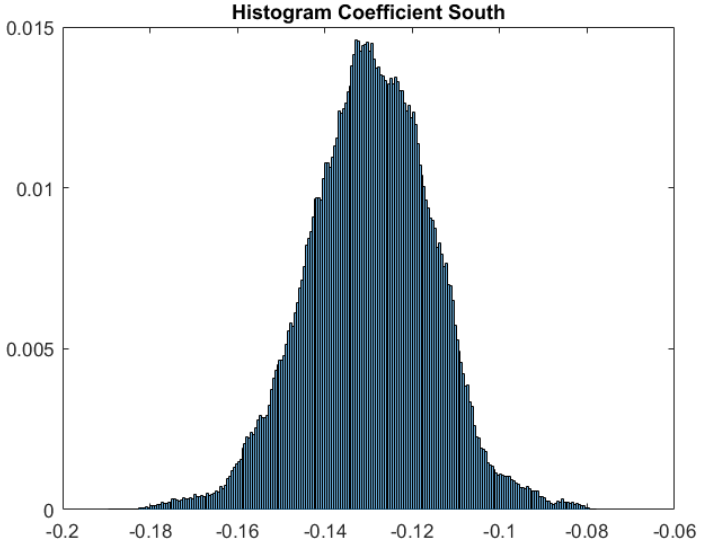
Table 2: Estimation of OLS regression Using Card's data

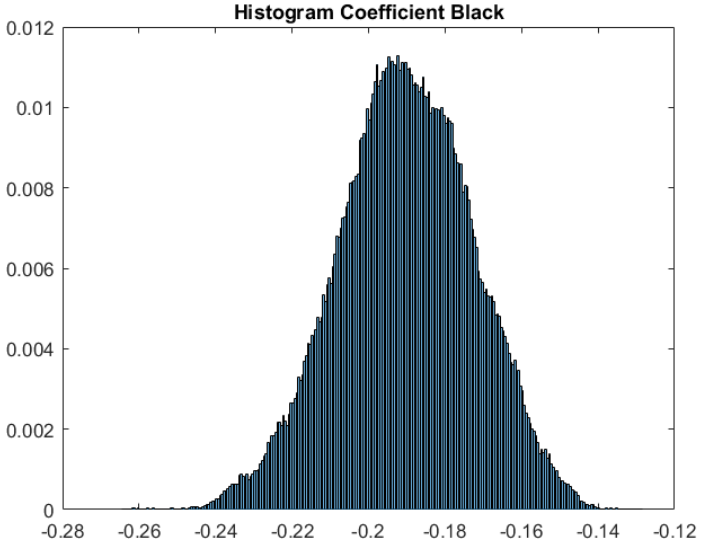
	Mean	Variance
Constant	4.9138	0.0040
Education	0.0737	0.0000
Experience	0.0393	0.0000
smsa	0.1658	0.0003
Black	-0.1894	0.0003
South	-0.1262	0.0002
RMSE	0.1425	0.0000

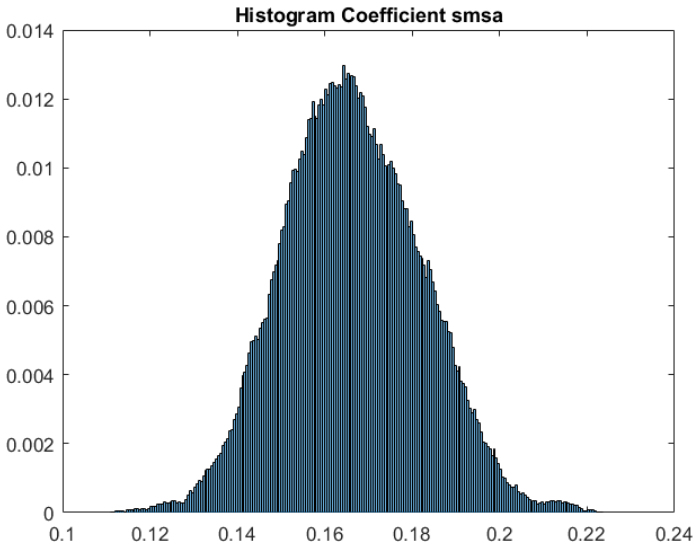
3. The value for education is given by 0.06, which using as prior give the following distribution:

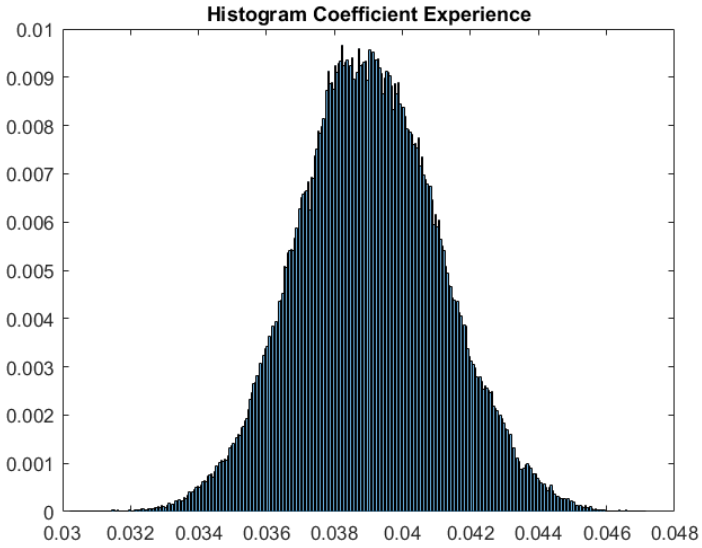


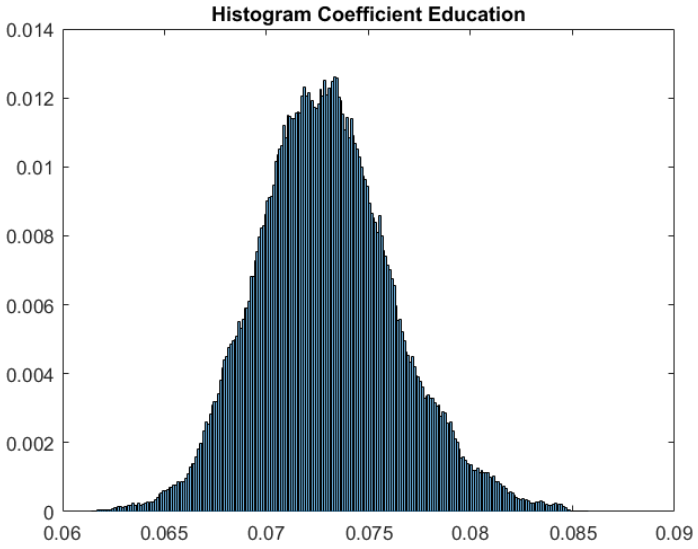

Histogram Coefficient Root Mean Squared Error
0.012
0.01
0.008
0.006
0.004
0.002
0
0.125
0.13
0.135
0.14
0.145
0.15
0.155
0.16
0.165


Histogram Coefficient South
0.015
0.01
0.005
0
-0.2
-0.18
-0.16
-0.14
-0.12
-0.1
-0.08
-0.06


Histogram Coefficient Black
0.012
0.01
0.008
0.006
0.004
0.002
0
-0.28
-0.26
-0.24
-0.22
-0.2
-0.18
-0.16
-0.14
-0.12


Histogram Coefficient smsa
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
0.1
0.12
0.14
0.16
0.18
0.2
0.22
0.24


Histogram Coefficient Experience
0.01
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
0.03
0.032
0.034
0.036
0.038
0.04
0.042
0.044
0.046
0.048


Histogram Coefficient Education
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
0.06
0.065
0.07
0.075
0.08
0.085
0.09

4. As we can see, although the distributions contain the actual value chosen on the OLS, 2. and 3. allows for not only have a mean value, which is pretty close to the OLS value, but also to have a distribution over the likely values of the coefficients. This allows for a more general understanding of the coefficient that a point estimation will gives up.